

Safeguarding California: Preparing for Climate Risks

An Update to the 2009 Adaptation Strategy

Water Sector



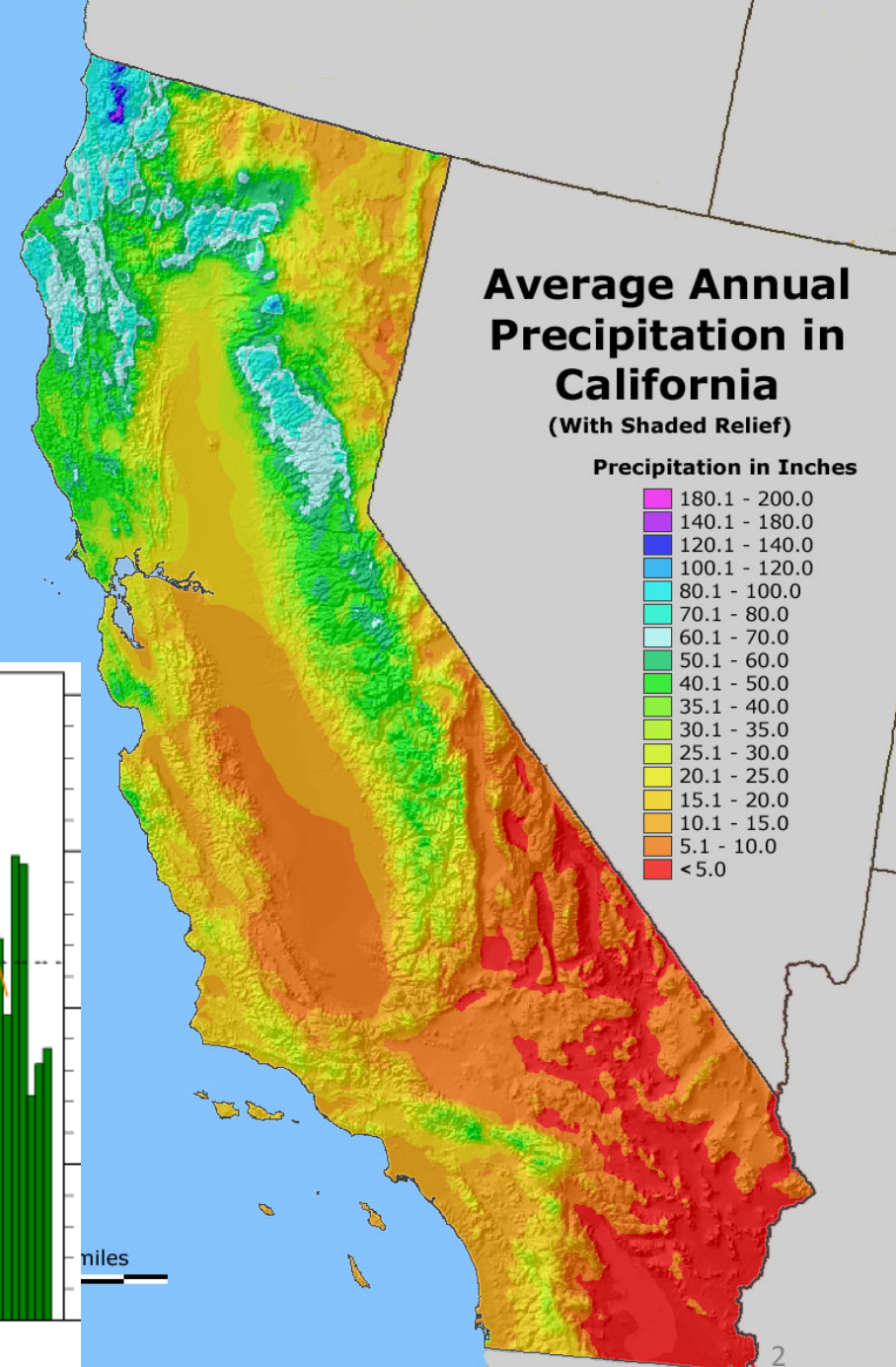
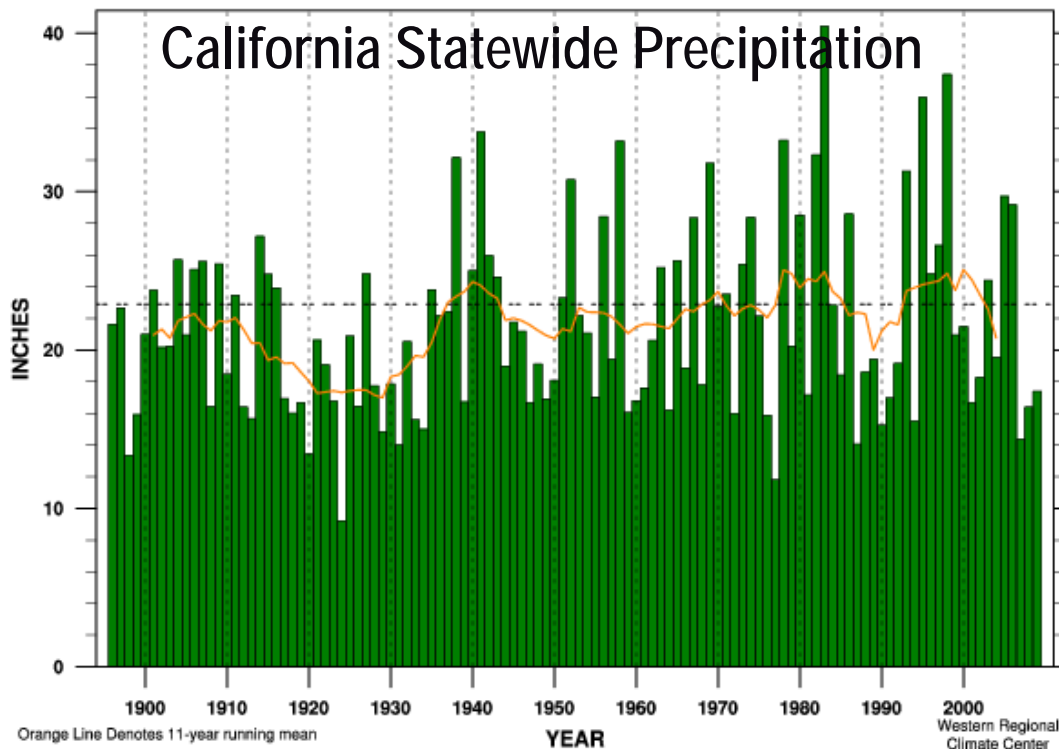
California Department of Water Resources

California Precipitation

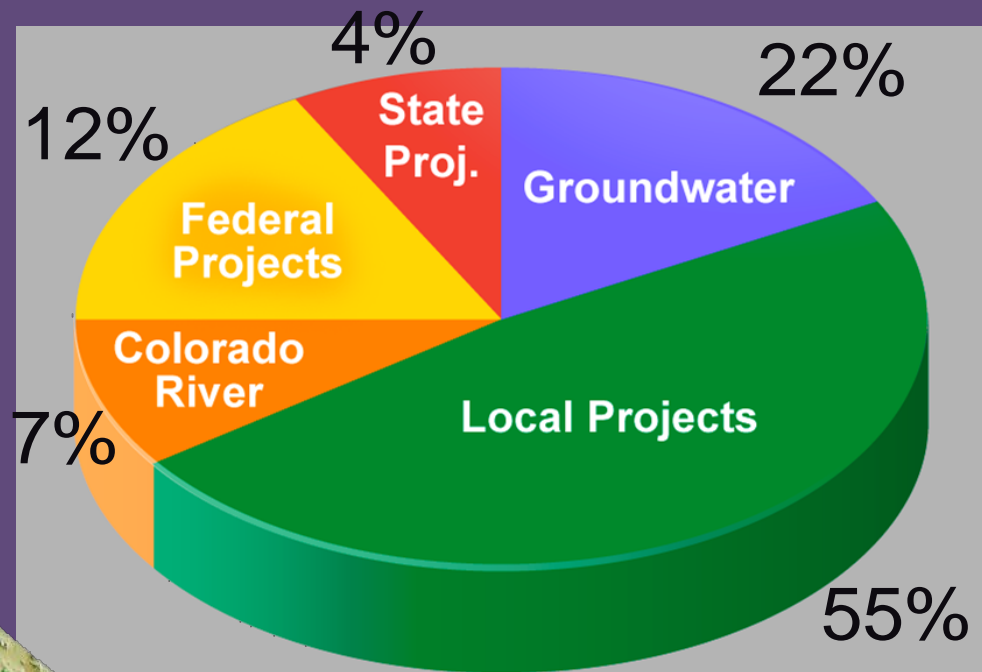
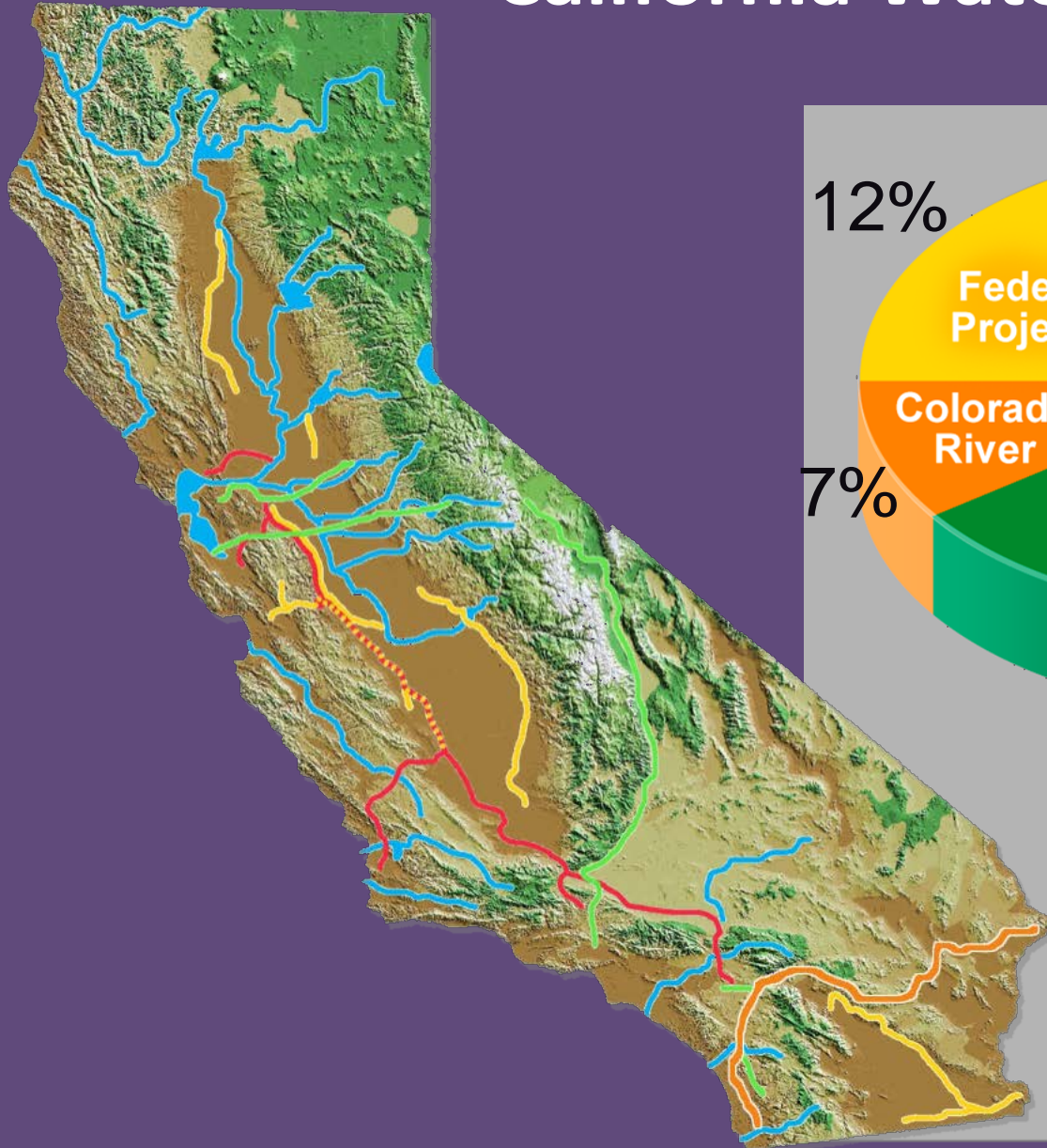
Variable & Extreme
Over Time & Location


Most precipitation occurs
November - March

California Statewide Precipitation



California Water Supply Systems



	Local	--	38.3 maf
	Colorado	--	4.8 maf
	Federal	--	8.1 maf
	State	--	2.9 maf
	Groundwater	--	15.0 maf

Climate Change: Stressing Our Water Systems

What are the Expected Impacts from These Changes?

Climate change is already having a profound effect on California's water resources as evidenced by changes in snowpack, river flows, and sea levels. Scientific studies show these changes will increase stress on the water systems in the future. Because some level of climate change is inevitable, the water systems must be adaptable to change.

The impacts of these changes will gradually increase during this century and beyond. California needs to plan for water system modifications that adapt to the following impacts of climate change:

Water Supply

Changes in river flow impacts water supply, water quality, fisheries, and recreation activities.



A reduction of snowpack will change water supply



Ecosystem

Forests, important contributors to water supply and quality, will be more vulnerable to pests, disease, changes in species composition, and fire.



Increases in water temperature and reductions in cold water in upstream reservoirs may hurt spawning and recruitment success of native fishes.



Lower streamflows will tend to concentrate urban and agricultural runoff, creating more water quality problems.

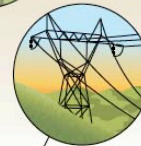


Water & Power Operations

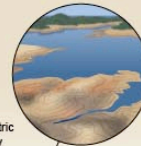
Operation of the water system for urban, agricultural, and environmental water supply and for flood management will become increasingly difficult because of the decisions and trade offs that must be made.



California's hydroelectric power generation may be less reliable; at the same time, higher air temperatures may increase energy consumption through increased use of air conditioning.



Water supply reliability will be compromised.

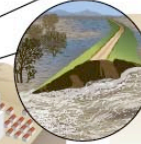


Warmer temperatures will affect water demands.

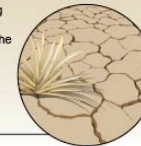


Flooding & Drought

Increased flooding potentially causes more damage to the levee system.



Higher temperatures and changes in precipitation will lead to droughts.

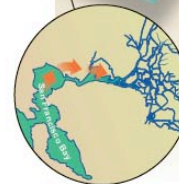


Coast & Delta

Higher water temperatures will make the Delta intolerable to some native species and also more attractive to some non-native invaders that may compete with natives.



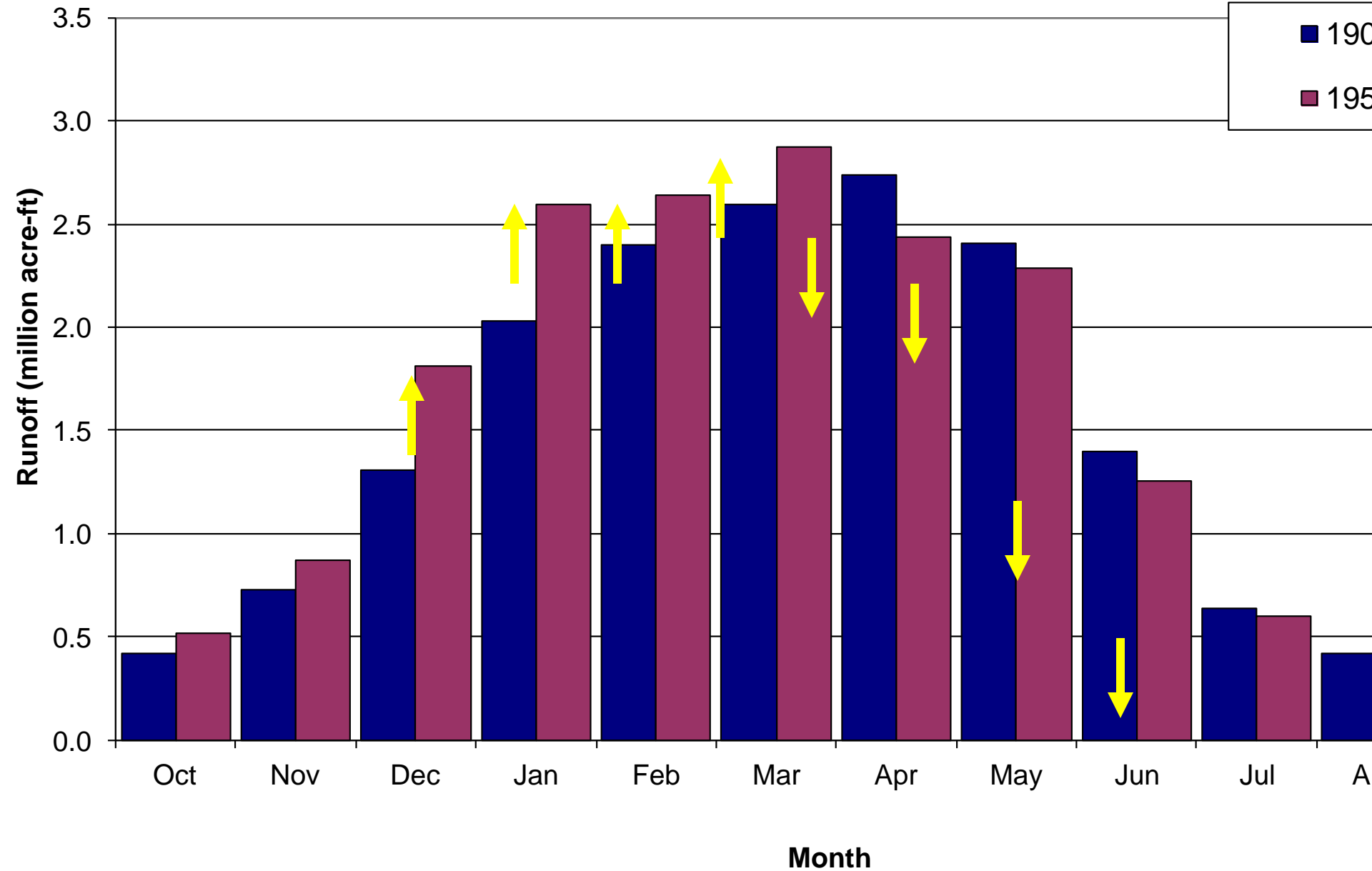
Increased salinity in the Delta will degrade drinking and agricultural water quality and alter ecosystem conditions.



Sea level rise threatens coastal communities and infrastructure, in particular, the water system in the Sacramento-San Joaquin Delta where the existing Delta levees were not designed or constructed to withstand these higher water levels.



Monthly Average Runoff of Sacramento River System



Fostering Locally Conceived and Designed Adaptation



- Foster partnerships & expand solution opportunity
- Diversify water portfolios & integrate supplies
- Leverage resources & economies of scale to reduce costs
- Integrate data, tools & resources management
- Implement multi-benefit actions with sustainable outcomes

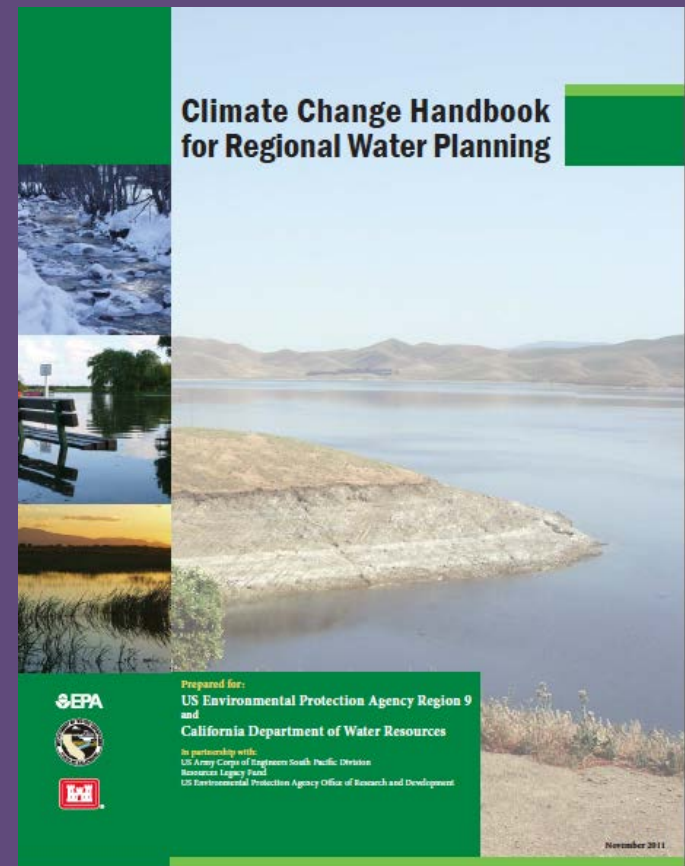
Resources for Climate Change Planning

Climate Change Handbook:

- Vulnerability assessment (40-question checklist)
- Impacts assessment methods (focus on water supply)

Climate Change Program at Dept. of Water Resources:

- 10 full-time staff
- Includes 4 regional specialists, assisting IRWM regions
- Climate Change Technical Advisory Group



<http://www.water.ca.gov/climatechange/CCHandbook.cfm>

Regional Climate Change Specialists

